

KRONGAUZ, A.N.

Some urgent problems of dosimetry in clinical radiology. Med.  
rad. no.6:78-82 '61. (MIRA 15:1)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo instituta rent-  
genologii i radiologii Ministerstva zdravookhraneniya RSFSR.  
(RADIOLOGY, MEDICAL)

ZOL'NIKOVA, N.I., kand.med.nauk; PERESLEGIN, I.A., kand.med.nauk;  
KRONGAUZ, A.N., kand.tekh.nauk; GOLIKOV, V.Ya., kand.med.nauk

Some hygienic problems in planning radiotherapy departments.  
Gig.i san. 26 no.12:18-22 D '61. (MIRA 15:9)

1. Iz Instituta obshchey i kommunal'noy gigiyeny imeni A.N.  
Sysina AMN SSSR, Gosudarstvennogo nauchno-issledovatel'skogo insti-  
tuta rentgeno-radiologii Ministerstva zdravookhraneniya RSFSR i  
kafedra obshchey gigiyeny I Moskovskogo ordena Lenina meditsinskogo  
instituta imeni I.M.Sechenova.

(RADIOTHERAPY--HYGIENIC ASPECTS)

FROLOVA, A.V. (Moskva, Leningradskiy prospekt, d.48,kv.49); KRONGAUZ, A.N.;  
SHUL'GINA, Z.I.; BOBYLEV, V.G.

Dosimetric investigations of ionization chambers for soft X-ray  
irradiation. Vest. rent. i rad. 36 no. 1:49-54 Ja-F '61.

(MIRA 14:4)

1. Iz dozimetricheskogo otdela (zav. - dotsent A.N. Krongauz)  
Nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta  
Ministerstva zdavookhraneniya RSFSR (dir. - prof. I.G. Lagunova).  
(IONIZATION CHAMBERS) (X RAYS)

KRONGAUZ, A.N.

Dosimetric characteristics of radiation therapy of nontumorous diseases. Med. rad. 7 no.9:17-19 S '62. (MIRA 17:8)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR.

KRONGAUZ, A.N.

Some problems of terminology in radiology. Med.rad. no.5:84-  
86 '62. (MIRA 15:8)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radio-  
logicheskogo instituta Ministerstva zdravookhraneniya RSFSR.  
(RADIOLOGY, MEDICAL—TERMINOLOGY)

KRONGAUZ, A. N.

"Bases of medical radiology" by V. I. Feoktsov. Reviewed by  
A. N. Krongauz. Med. rad. no.2:94 '62. (MIRA 15:7)

(RADIOLOGY, MEDICAL) (FEOKTISOV, V. I.)

KRONGAUZ, A.N.; PARSHIN, I.M.; PROKSH, V.R.; GROMOV, Yu.D.; YAKUNIN, V.F.

Universal condenser dosimeter for roentgen and gamma irradiations.  
Vest. rent. 1 rad. 37 no.5:60-63 S.O '62. (MIRA 17:12)

1. iz dozimetricheskogo otdela (zaveduyushchiy - dotsent A.N. Krongauz) i eksperimental'nykh masterskikh (direktor I.M. Parshin) Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiolicheskogo Instituta (direktor - prof. I.G. Lagunova).

KRONGAUZ, A.N.; PAVLOVA, T.G.; FROLOVA, A.V.

Dosimetric characteristics of gammatrin-2. Med.rad.no.1:  
12-17'63. (MIRA 16:10)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-  
radiologicheskogo instituta Ministerstva zdravookhraneniya  
RSFSR.

(GAMMA RAYS—EQUIPMENT AND SUPPLIES)  
(RADIATION—DOSAGE)



LINCHEVSKAYA, G.A.; KRONGAUZ, A.N.

Calculation of absorbed doses in radiotherapy with a colloid  
solution of radioactive gold. Med. rad. 7 no.12:7-13 D'62.

(MIRA 16:10)

1. Iz otdela klinicheskoy dozimetrii (zav. - dotsent A.N.  
Krongauz) Gosudarstvennogo nauchno-issledovatel'skogo rent-  
geno-radiologicheskogo instituta Ministerstva zdravookhra-  
neniya RSFSR.

KRONGAUZ, A.N.; PETROV, V.A.; LINCHEVSKAYA, G.A.; PALLADIYEVA,  
N.M.; MAMIN, R.G., red.; MATVEYEVA, M.M., tekhn. red.

[Measurement and calculation of the absorbed dosages in  
internal and external irradiation] Izmerenie i raschet  
pogloshchennykh doz pri vneshnem i vnutrennem obluchenii.  
Moskva, Medgiz, 1963. 134 p. (MIRA 17:3)

KRONGAUZ, A.N.; ALIYEV, B.M.

Influence of field dimensions on the effectiveness of the  
method of radiation in static distance X-ray and gamma  
therapy. Med. rad. 8 no.2:10-12 F'63 (MIRA 16:11)

1. Iz otdela klinicheskoy dozimetrii Nauchno-issledova-  
tel'skogo instituta rentgenologii i radiologii Ministerstva  
zdravookhraneniya RSFSR i kafedry rentgenologii (zav. - prof.  
S.A.Reynberg) Tsentral'nogo instituta usovershenstvovaniya  
vrachey.

\*

BOCHKAREV, V.V.; KRONGAUZ, A.N.; SOKOLOVA, T.N.; TIMOFEYEV, L.V.

Determination of the dose of radiation from 8-applicators.  
Med.rad. 8 no.2:66-73 P'63 (MIRA 16:11)

\*

ACCESSION NR: AR4032165

S/0058/64/000/002/A046/A046

SOURCE: Ref. zh. Fiz., Abs. 2A388

AUTHORS: Gurvich, A. M.; Krongauz, A. N.; Lyapidevskiy, V. K.;  
Mandel'tsvayg, Yu. B.; Nikiforova, A. P.; Popov, V. I.; Titov, A. A.

TITLE: Comparative dosimetric characteristics of single crystals  
of cadmium sulfide

CITED SOURCE: Tr. Vses. n.-i. in-ta med. instrumentov i oborud.,  
no. 5, 1962, 40-51

TOPIC TAGS: cadmium sulfide, single crystal cadmium sulfide,  
dosimetric characteristics, therapeutic x ray monitoring, radiation  
dose power, roentgen ampere characteristic, variation with hardness

TRANSLATION: The dosimetric characteristic of CdS single crystals,  
as applied to problems of x-ray therapy, were investigated. The

Card 1/3

ACCESSION NR: AR4032165

crystals used were grown either (a) by sublimation of luminor CdS by the Grillaud method (Group I) or (b) by sublimation of luminor CdS in a nitrogen jet (Group II). Crystals of the first group were activated with indium or gallium, and those of the second group with Cl or with AgCl, with a small amount of Zn introduced. The investigations were carried out with x-ray equipment RUM-7 ("soft" radiation, tube voltage 20--60 kV maximum) and RUM-3 ("hard" radiation, 100--200 kV maximum). The radiation dose power in air was measured with an ionization dosimeter. The sensitivity of crystals of Group I was 7--264  $\mu\text{A/r/min}$ , while those of group II occupied an intermediate position. A strictly linear roentgen-ampere characteristic was possessed by the least sensitive crystals. The "variation with hardness" was measured for the investigated crystals and the corresponding theoretical curve calculated. The results of the measurements and of the calculations are in satisfactory agreement in the region of strong absorption. In the region of weak absorption, the experimental "variation with hardness" is lower than the calcu-

Card 2/3

ACCESSION NR: AR4032165

lated value, owing to the inhomogeneity of the employed radiation. It is concluded that in the limited energy range used in x-ray therapy (at a generation voltage of 150--200 kV maximum), the investigated single crystals, particularly those of the first group, can be used successfully as detectors in clinical x-ray dosimeters. Yu. Mandel'tsveyg.

DATE ACQ: 31Mar64

SUB CODE: PH, SD

ENCL: 00

Card 3/3

KRONCAUZ, A.N.

Values and units of the measurement of radioactivity and  
ionizing radiations. Med. rad. 8 no.10:98-99 0 '63.

(MIRA 17:6)

1. Iz nauchno-issledovatel'skogo rentgeno-radiologicheskogo  
instituta Ministerstva zdravookhraneniya RSFSR (direktor -  
prof. I.G. Lagunova).



KRONGAUZ, A.M. (Moskva); LYAPIDEVSKIY, V.K. (Moskva); TITOV, A.A. (Moskva)

Sulfide-cadmium dosimeter for X- and gamma-radiation. Trudy  
Tsent. nauch.-issl. inst. rentg. i rad. 11 no.1:60-72 '64.  
(MIRA 18:11)

PRIZHANSKIY, S.V.; KROMMAUZ, A.N.; URANOV, Ye...

X-ray doses sustained during preventive fluoroscopic examinations.  
Vest. rent. i rad. 39 no.1:54-59 Ja-F '64.

(MIRA 18:2)

1. Orgmetodotdel (zav. - prof. I.M. Yakhnich) i otdel klinicheskoy  
dozimetrii (zav. - dotsent A.N. Krommauz) Gosudarstvennogo nauchno-  
issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva  
zdravookhraneniya RSFSR, Moskva.

KHONGINE, A.N.; PROLOVA, E.V.

Use of long-wave X-ray irradiation in dermatology. Vest. dermat. i ven  
38 no.4:66-68 Ja '64.  
(MIRA 18:6)

1. Otdel klinicheskoy dermatologii Nauchno-issledovatel'skogo rentgeno-  
radiologicheskogo instituta (dir. ... prof. I.G. Iagunova), Moskva.

KRONGAUZ, A.N.; PROKOVA, A.V.

Method of calculating the spectral doses of long-wave X-ray  
radiation. Vest. rent. i rad. 39 no.2:60-61 H-B '62.

(MIRA 18:6)

1. Nauchno-issledovatel'skiy rentgeno-radiologicheskiy institut  
Ministerstva zdoravokhraneniya SSSR, Moskva.

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0

APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0"

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0

APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0"

KRONGAUZ, A.N.; SHAGIMARDANOV, N.S.

Ruler for the determination of relative deep doses and selection of conditions for irradiation by large focus skin distance  $\gamma$ -units.  
Med. rad. 10 no.7:83-86 J1 '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy rentgeno-radiologicheskii institut i  
Nauchno-issledovatel'skiy institut shtetnogo mashinostroyeniya,  
Moskva.

KLASCHKE, A.M. (Czechoslovakia)

Small, jury protective devices in diagnostic X-ray apparatuses.  
Vent. cont. 1 rad. 10 no. 2: 54-56 Mr-Apr 1965.

(MEDA 18:6)



PHASE I BOOK EXPLOITATION

SOV/4657

Chekmarev, A. I., M. L. Mikhel', I. A. Krongauz, and Ye. M. Vitenberg

Tara dlya khimicheskikh produktov (Containers for Chemical Products)  
Moscow, Nauchno-issl. in-t tekhniko-ekon. issled., 1960. 230 p.  
2,000 copies printed.

Sponsoring Agency: Gosudarstvennyy komitet Soveta Ministrov SSSR po khimii.

Eds: I. A. Krongauz, S. I. Babushkina, and L. I. Khoras.

PURPOSE: This book is intended as a guide for all engineering, technical, and planning workers concerned with the packing and shipping of chemical products.

COVERAGE: The book discusses the design, manufacture, and utilization of all types of containers for chemical products. It includes technical data of a nature to permit the proper choice of a container in a given situation. New types of containers developed in the Soviet Union, as well as foreign experience, are described. The letter designations for

Card ~~1/5~~

Containers for Chemical Products

SOV/4657

all such containers are listed. No personalities are mentioned.  
There are 50 references: 20 Soviet, 19 English, and 11 German.

TABLE OF CONTENTS:

Introduction

5

Metal Containers

1. Metal barrels
2. Steel drums
3. Steel flasks
4. Large steel cans and canisters
5. Small steel cans
6. Steel cylinders

11  
11  
39  
55  
64  
71  
74

Wooden Containers

1. Wooden barrels
2. Pressed plywood barrels
3. New and improved kinds of barrels

80  
80  
92  
97

Card 2/5

CHERSKOV, A.S., veterinarnyy vrach; POZDNYAKOV, A.G., veterinarnyy  
vrach; KRONGAUZ, K.A., veterinarnyy vrach

Specific prophylaxis in swine plague. Veterinariia 37 no.6:  
31-33 Je '60. (MIRA 16:7)

(Swine plague)

BOZHENKOV, K. A., CHERKOV, A. S. and POZDNYAKOV, A. G.

"About specific prophylaxis of hog cholera."

Veterinariya, Vol. 37, No. 6, 1960, p. 31

Vet. Dn

AGRE, V.L.; AL'DIYEVA, K.N.; ANANYAN, V.V.; BERLIN, R.I. [deceased];  
ISTOMIN, A.V.; KAGAN, I.A.; KRONGAUZ, N.D.; KULAKOV, A.M.;  
MARKOV, V.P.; MATVEYEV, Yu.M.; NESVETAYEV, A.M.; OSIPOV, A.P.  
[deceased]; POZIN, M.S.; FAYNSHTAYN, V.M.; SHAPIRO, B.S.;  
SHIVCHENKO, N.A.; SHCHIRIN, V.N.; AL'SHEVSKIY, L.Ye., kand.  
tekhn.nauk, red.; VLADIMIROV, Yu.V., red.izd-va; MIKHAYLOVA,  
V.V., tekhn.red.

[Rolling and pipe mills] Prokatnoe i trubnoe proizvodstvo.  
Pod red. L.E.Al'shevskogo i A.V.Istomina. Moskva, Gos.nauchno-  
tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1962.  
246 p.  
(MIRA 15:2)

1. Moscow. TSentral'nyy institut informatsii chernoy metallurgii.  
(Rolling mills) (Pipe mills)

KRONGAUZ, N.N.

Conveyers in the production of quilted linings. Leg.prom. 15 [1.e.16]  
no.3:19-21 Mr '56. (MIRA 9:7)

1.Glavnyy inzhener Kiyevskoy shveytnoy fabriki "Ukraina".  
(Coats) (Garment cutting)

KRONGAUZ, N.N., red.; SKORODUMOVA, N.I., starshiy nauchnyy sotr.;  
SHIMELIOVICH, Yu.B., red.; POTOPOVA, N.L., tekhn. red.

[Collection of reports of the Scientific Research Conference of  
Workers of the Clothing Industry of the Ukrainian S.S.R.] Sbor-  
nik dokladov Nauchno-tekhnicheskoi konferentsii rabotnikov  
shveinoi promyshlennosti Ukrainskoi SSR, Kiev, 1959. Moskva,  
TSentr.in-t nauchno-tekhn.informatsii legkoi promyshl., 1961. 18 p.  
(MIRA 14:12)

1. Nauchno-tekhnicheskaya konferentsiya rabotnikov shveyroy pro-  
myshlennosti Ukrainskoy SSR, Kiev, 1959.  
(Ukraine---Clothing industry)

KRONGAUZ, N.N. (Kiyev)

Efficiency promoters struggle for the modernization and better  
utilization of equipment. Shvein.prom. no.2:34-35 Mr.-Ap '61.  
(Kiev Economic Region—Clothing industry—Equipment and supplies) (MIRA 14:4)



KRONGAUZ, N.N.

Kiev's clothing workers struggle to improve the quality of  
clothing. Shvein.prom. no.3:16-18 My-Je '62. (MIRA 15:6)  
(Kiev—Clothing industry)

KRONGAUZ, N.M.

Some problems in the organization of continuous production  
lines in clothing factories. Shvein. prom. no.1:31-33  
Ja-F '63. (MIRA 16:4)

(Clothing industry)  
(Assembly-line methods)

KRONGAUZ, N.N. [Kronhauz, N.N.]

Mechanization of steaming and pressing operations. Leh.prom.  
no.1:14-19 Ja-Mr '63. (MIRA 16:4)

1. Trest shveyroy promyshlennosti Kiyevskogo soveta narodnogo  
khozyaystva.

Comm. Tech. Sci.

Dissertation: "Efficient systems of supplying industrial establishments with  
heat from Central Boiler Rooms." 29 Oct 49

Moscow Order of the Labor Red Banner Engineering Construction Institute

SO Vecheryaya Moskva  
Sum 71

V. V. Kuybyshev

KRONLAUZ, S. D.

"Efficient Systems of Supplying Industrial Establishments with Heat From Central Boiler Rooms." Thesis for degree of Cand. Technical Sci. Sub 29 Oct 49, Moscow Order of the Labor Red Banner Engineering Construction Inst. imeni V. V. Kuybyshev

Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva. Jan-Dec 1949.

KRONGAUZ, S. D.

PA 161T66

USSR/Engineering - Heat  
Boiler Systems

Jun 50

"Problem of Selecting a System for Supplying  
Heat to an Industrial Enterprise From a Cen-  
tral Boiler Room," S. D. Krongauz, Cand Tech  
Sci, 3 $\frac{1}{2}$  pp

"Prom Energet" No 6

Describes four systems, giving line diagrams  
and noting advantages and disadvantages of  
each. Concludes choice must be determined in  
each case by individual requirements.

161T66

495. METHOD OF DETERMINING HEATING CAPACITY OF A SYSTEM  
HEATING CAPACITY, HEATING, KRONBERG, S.G. (U.S. Pat. 3,115,001)  
U.S. Pat. 3,115,001. A method of calculation is described. 12p.  
U.S. Pat. 3,115,001.

F

P

1953. PRINCIPLES OF DETERMINING HEATING CAPACITY. F. H. KROENKE.  
F. H. KROENKE AND V. J. KROENKE. KROENKE, S. (25 ENCL. 1, 11/1/53)  
(encl.). June 1951, 2c-31). A review of the literature is descriptive, with  
examples. (L).



F

1319. CONSTRUCTION AND OPERATION OF SYSTEMS FOR SUPPLY OF HEAT IN INDUSTRIAL PLANTS. KROKHIN, S.D. (Za Ekon. Topliva (fuel econ.), Feb. 1962, 22-25). The argument is presented for not using heat supplied in bulk from a heat-and-power station for occasional heating loads, which may be taken more economically by gas, oil, steam or electric heating. (L).

KRONGAUZ, S. D.

Factories--Heating and Ventilation

Problems of building and operating heating systems for industrial enterprises. Za ekon.  
top., No. 2, 1952

Monthly List of Russian Accessions, Library of Congress, March 1952. Unclassified.

KRONCAUZ, S. D.

Heat Engineering

Method of determining the parameters of heat supply systems for industrial buildings.  
Za ekon. top., 9, no. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952, UNCLASSIFIED.

KRONGAUZ, S.D.

Electrical Engineering Abst.  
Vol. 57 No. 675  
Mar. 1954  
Mechanical and Civil Engineering  
Technology

697.3  
1341. Economy of thermal and electric energy in heating and heat supply systems in industrial buildings. S. D. Krongauz. *Elektr. Stantii*, 1953, No. 7, 9-14. In Russian.

Use of heat from power stations or boilers in industrial buildings should be allowed for heating only when the heat from manufacturing processes is insufficient to maintain the temperature at the desired level. The relationship between the consumption of heat and water v. amount of heat from manufacturing processes should be determined by tests for various buildings or groups of buildings. Heating and ventilation design should incorporate use of local heat and water control devices. L. KRONGAUZ

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0

APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0"

KRONGAUZ, S., kandidat tekhnicheskikh nauk.

All-purpose continuous operation hardening chamber for precast reinforced concrete plants. Stroimaterial'noe i konstr. 1 no. 11: 7-11 N '55. (MLRA 9:5)

1. Zaveduyushchiy teplotekhnicheskoy laboratorii Vsesoyuznogo nauchno-issledovatel'skogo instituta zhelezobetona. (Concrete plants)

USSR/Chemical Technology. Chemical Products and Their Application -- Silicates.  
Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5322

Author: Krongauz, S. D.

Institution: None

Title: Improvement of Heat and Moisture Treatment of Concrete and Reduction  
of Steam Expenditure in the Chambers

Original

Publication: Beton i zhelezobeton, 1956, No 7, 242-244

Abstract: It is recommended to install throttle diaphragms at the sites of live steam application. The presence of diaphragms increases by several times the resistance of steam injection into the chamber, as compared with the rated resistance of steam distribution system, which results in a better regulation of the heat supply system and a minimal difference between the actual and the rated inflow of steam into the chamber. According to the experimental data steam expenditure on steaming hollow articles can be decreased to  $70 \text{ kg/m}^3$  of solid concrete.

Card 1/1

KRONBAUZ, S.D., kand.tekhn.nauk.

Improving the utilization of heat in factories and construction  
yards producing plain and reinforced concrete products. Prom.energ.  
12 no.10:14-18 0 '57. (MIRA 10:10)  
(Reinforced concrete) (Concrete plants)



KRONGAUZ, Samuil Davydovich, kand. tekhn. nauk; LYKOV, M.V., kand. tekhn. nauk, nauchnyy red.; SHPAYER, A.L., red. izd-va; TEMKINA, Ye.L., tekhn. red.

[Heat treatment and heat supply at precast reinforced-concrete plants] Teplovaia obrabotka i teplosnabzhenie na zavodakh sbornogo zhelezobetona; teoreticheskie osnovy i praktika. Moskva, Gos. izd-vo lit-ry po stroit. i arkhitekt. i stroit. materialam, 1961. 270 p. (MIRA 15:1)

(Autoclaves)

MIRONOV, S.A., doktor tekhn. nauk, prof.; MALININA, L.A., kand. tekhn. nauk; FEDOROV, V.A., inzh.; KAYSER, L.A., inzh.; KRONGAUZ, S.D., kand. tekhn. nauk; PANFILOVA, L.I., kand. tekhn. nauk; SEMENOV, L.A., doktor tekhn. nauk, prof.; PODUROVSKIY, N.I., kand. tekhn. nauk; VINNITSKIY, A.M., kand. tekhn. nauk; KLIMOVA, G.D., red. izd-va; SHEVCHENKO, T.N., tekhn. red.

[Instructions on curing concrete and reinforced concrete products at plants and building sites] Instruktsiia po preparivaniu betonnykh i zhelezobetonnykh izdelii na zavodakh i poligonakh. Moskva, Gosstroizdat, 1962. 33 p. (MIRA 15:12)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i zhelezobetona, Perovo. 2. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Mironov).  
(Precast concrete—Curing) (Autoclaves)

KRONCAUZ, S. R.

Planirowanie i finansirowanie kapieal'nykh vlozhenii v ugol'noi promyshlennosti. Moskva, Ugletekhizdat, 1947.

Title translated: Planning and financing of capital investments in the coal industry.

KRONGAUZ, V. A.

in collection of articles ~~7 (cont.)~~ on Inorganic and ~~799~~ Organic Systems, Moscow, Izd-vo AN SSSR, 1959, 416pp (most works a continuation of Sb rabot po radiofiz. khim, 1955)

There are 7 figures and 10 references of which 3 are Soviet, 6 English, and 1 German.

### PART 3. REACTIONS OF ORGANIC SUBSTANCES

Krongauz, V.A., Bagdasar'yan, Kh.S. Energy Transfer in the Radiolysis of Benzoyl Peroxide Solutions 205

This paper considers the radiolysis of benzoyl peroxide solutions in benzene, cyclohexane, and ethyl acetate. In the benzene solution of peroxide, the transfer of excitation energy is from the solvent to the solute. This effect was not detected in cyclohexane or ethyl acetate solutions, in which the radiation decomposition of peroxide shows a chain mechanism. The authors determined yields of radicals for the solvents and the peroxide. Small additions of anthracene and phenanthrene to benzene inhibit the decomposition of peroxide. There are 7 figures, 4 tables, and 15 references of which 2 are Soviet, 11 English, and 2 German.

Card 17/31

KRONGAUZ, V. A. Cand Chem Sci -- (diss) \* "Intermolecular transfer of excitation energy during radiolysis of solutions of organic matter." Mos, 1957. 7 pp  
(Min of Chem Industry USSR. Order of Labor Red Banner Sci Res Phys-Chem Inst im L. Ya. Karpov), 120 copies (KL, 42-57, 91)

-7-

AUTHORS: Krongauz, V. A., Bagdasar'yan, Kh. S. 20-114-4-41/63

TITLE: Energy Transfer on the Occasion of the Radiolysis of Benzoyl Peroxide Solutions (Peredacha energii pri radiolize rastvorov perekisi benzoila)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 829-832 (USSR)

ABSTRACT: Under the influence of ionizing radiation upon organic solutions the primarily absorbed energy may be transferred from one component to another. In order to determine the influence which the quality of the solvent exerts upon the energy transfer, the authors studied the radiolysis of benzoyl peroxide solutions in benzol, cyclohexane and ethylacetate. The radiolysis was carried out by  $\gamma$ -rays  $\text{Co}^{60}$  in the absence of air. The initial velocity of the peroxide decomposition was measured iodometrically. Its decomposed amount did not exceed 10-20% of its initial concentration. Figure 1 shows the dependence of the initial velocity of the radiolysis on the initial concentration. The benzoylperoxide absorbs part of the total energy absorbed by the solution, this part corresponding to the electron share of the peroxide

Card 1/4

Energy Transfer on the Occasion of the Radiolysis of Benzoyl Peroxide Solutions 20-114-4-41/63

in the solution. The computed number of molecules of peroxide, which decompose under the given circumstances, is 1760. This value represents a twenty-fold number of molecules which would decompose, if the amount of energy absorbed by the peroxide had been used for breaking up the linkage --O--O--. To clarify the reasons which cause a high yield of radiation at the decomposition of the benzoylperoxide, the authors made tests with diphenylpicrylhydrazyl (henceforth called DPhPH), in order to determine the yield of free radicals from benzol, as well as from benzol solutions of benzoylperoxide. The alteration of the DPhPH concentration was measured spectrophotometrically. The critical concentration, which is necessary for the determination of all free radicals obtained from radiolysis, is  $1.10^{-4}$  mol/liter. The yield of free radicals at the radiolysis of pure benzol determined by the authors, is in accordance with the data of other authors. As the formation velocity of the free radicals in pure benzol is considerably less than the decomposition velocity of the peroxide, the high radiation yield cannot be explained by an interaction of the latter with those radicals. The radiolysis of the peroxide does not take place according to a chain

Card 2/4

Energy Transfer on the Occasion of the Radiolysis of Benzoyl Peroxide Solutions 20-114-4-41/63

mechanism. One may assume that the high radiation yield in the radiolytic decomposition of the peroxide is due to the energy transfer of primarily produced benzol molecules upon the peroxide molecules. A comparison of the results obtained from radiolyses of benzoylperoxide in different solvents shows that the energy transfer from the solvent upon the solved substance is dependent on the quality of the solvent. The individual stages of the radiolysis are as follows: 1) Formation of excited benzol molecules at the absorption of the radiation energy, 2) a spontaneous disactivation of the same molecules. 3) energy transfer of the excited benzol molecules upon the peroxide and the decomposition of the latter, and 4) decomposition of the peroxide by absorption of the  $\gamma$ -rays by the peroxide itself.

There are 4 figures and 12 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute for Physical Chemistry imeni L. Ya. Karpov)

Card 3/4



Energy Transfer on the Occasion of the Radiolysis of Benzoyl Peroxide Solutions 20-114-4-41/63

PRESENTED: December 30, 1956, by V. A. Kargin, Member, Academy of Sciences, USSR

SUBMITTED: December 27, 1957

Card 4/4

KRONGAUZ, V. A.

AUTHORS: Krongauz, V. A., Bagdasar'yan, Kh. S.

20-5-27/48

TITLE: Radiation Chemical Effect of Excitation Energy Transfer in Three-Component Solutions ( Radiatsionnokhimicheskiy effekt perekhoda energii возбуждениya v trekhkomponentnykh rastvorakh).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 5, pp. 817-819 (USSR).

ABSTRACT: The authors showed already in preliminary works (reference 1-2) that with the radiolysis of solutions of benzene-superoxide in benzene the primary absorbed energy is transferred from the excited benzene molecules to the molecules of superoxide. In order to closer study the mechanism of energy transfer of the radiolysis of the three-component benzene + phenantrene + benzoyl-superoxide, the present work investigates the kinetics of the radiolytic decomposition of benzoyl-superoxide of these compounds within a wide range of phenantrene concentrations. (0 - 1 mol/l) with three different concentrations of benzoyl-superoxide (0,0125 ; 0,0083 ; 0,0042 mol/l). The radiolysis of the solutions was carried out under the influence of  $\gamma$  - rays of  $Co^{60}$  with

Card 1/3

Radiation Chemical Effect of Excitation Energy Transfer 20-5-27/48  
in Three-Component Solutions.

no air present. The differential dose was  $1,5 \cdot 10^{15}$  eV/ml.sec. A diagram shows the dependence of the initial velocity of the radiolysis of benzoyl-superoxide on the concentration of phenantrene for three concentrations of superoxide. With increasing concentration the velocity of radiolysis decreases at first, passes a minimum and then increases linearly. The authors study seven processes occurring with the radiolysis of the compounds investigated. They take the following simplified conditions as basis: As the concentration of benzoyl-superoxide in the solution is small the decomposition of the superoxide by direct influence of radiation can be neglected. The decomposition of the excited molecules of benzene and phenantrene to their radicals is not taken into account because of the small yield of radiation of the radicals of these hydrocarbons. The excited phenantrene molecules obtained by means of two certain (mentioned) reactions are kinetically identical. A formula is given for the velocity of the radiolytic decomposition of benzoyl-superoxide and it is specialized for sufficiently great concentrations of phenantrene. In the end the authors still estimate the mean life of the

Card 2/3

Radiation Chemical Effect of Excitation Energy  
Transfer in Three-Component Solutions.

20-5-27/48

excited phenantrene molecules (which transfer their energy to benzoyl-superoxide) and find the value  $\tau \sim 10^{-7}$  sec. Finally they shortly report on analogous results of other authors. There are 2 figures, and 7 references, 5 of which are Slavic.

ASSOCIATION: Physical-Chemical Institute imeni L. Ya. Karpov (Fiziko-khimicheskiy institut im. L. Ya. Karpova).

PRESENTED: April 25, 1957, by N. N. Semenov. Academician

SUBMITTED: April 25, 1957.

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Krongauz, V. A., Bagdasar'yan, Kh. S. 76-32-3-36/43.

TITLE: The Radiolysis of Solutions of Tertiary Butyl Peroxide  
(Radioliz rastvorov perekisi tretichnogo butila)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol 32, Nr 3,  
p 717 (USSR)

ABSTRACT: It had already been shown earlier that upon  $\gamma$ -radiation of benzoyl solutions (in benzene), a transition of the primarily absorbed energy excited benzene molecules to the molecules of peroxide, takes place. It is interesting to find out whether the taking up of energy of benzoyl peroxide is to be traced back to the presence of the weak peroxide bond or to the aromatic molecular structure of peroxide. In order to verify the assumption that the former is not the cause, the investigations in benzene and cyclohexane solutions mentioned in the title were performed. The concentrations of the solutions were 0.02 - 0.5 mol/l; the  $\gamma$ -radiation was obtained by  $\text{Co}^{60}$ . From the small yield of the radiation ~~energy~~ of tert-butyl peroxide in benzene and cyclohexane, can be concluded that no energy transfer

Card 1/2

76-32-3-36/43

The Radiolysis of Solutions of Tertiary Butyl Peroxide

from the solvent to peroxide takes place. In connection with the earlier observations, it can be maintained that especially effective transfers of excitation energy only take place in cases where both solution components possess an aromatic structure. Individual data of concentrations, as well as energetic quantities and measurements are given. There are 3 references, 1 of which is Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva  
(Moscow, ~~Physico-Chemical~~ Institute imeni L. Ya. Karpov)

SUBMITTED: February 21, 1957

Card 2/2

AUTHORS: Krongauz, V. A., Bagdasar'yan, Kh. S. SOV/76-32-8-22/37

TITLE: The Investigation of the Radiochemical Effect of the Excitation Energy Transfer in Binary Systems by Means of the Polymerization Method (Issledovaniya radiatsionno-khimicheskogo effekta perekhoda energii vzbuzhdeniya v dvukhkomponentnykh sistemakh metodom polimerizatsii)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 8, pp. 1863-1868 (USSR)

ABSTRACT: Continuing earlier papers the investigation mentioned above was carried out to further explain the corresponding problems; the authors investigated the radiation polymerization of styrene alone as well as together with methyl methacrylate in the presence of benzoyl peroxide and the dinitrile of azoiso fatty acid. The polymerization was carried out under the influence of  $\gamma$ -rays of  $\text{Co}^{60}$  at  $30,2^{\circ}\text{C}$  in the dilatometer described already. The experimental results show that the addition of 0,01 mole/l of the peroxide to styrene increases its polymerization rate by a factor of three, i. e. the formation rate of the radicals (initiating the polymerization) is increased by a factor of nine.

Card 1/3

SOV/76-32-8-22/37

. The Investigation of the Radiochemical Effect of the Excitation Energy  
Transfer in Binary Systems by Means of the Polymerization Method

In the case of an addition of dinitrile no energy transfer from the solvent to the dissolved substance was found. This is (as in earlier papers) explained by the fact that the nitrile does not contain an aromatic ring (like the peroxide), as the role of the energy acceptor is dependent on the aromatic structure. In connection with the observations made by T. S. Nikitina and Kh. S. Bagdasar'yan (Ref 6) the time course of the common radiation polymerization of styrene and methyl methacrylate is investigated. An addition of styrene considerably decreases the polymerization rate. The starting rate is calculated according to an equation by Melville (Melvil) (Ref 12). A difference between the data obtained and those by Nikitin and Bagdasar'yan is explained by a difference between the methods employed. An agreement of the data obtained with those by Walling (Uoling) (Ref 9) is found. Finally the authors express their gratitude to S. S. Medvedev, Member, Academy of Sciences, USSR. There are 4 figures and 18 references, 5 of which are Soviet.

Card 2/3



SOV/76-32-8-22/37

The Investigation of the Radiochemical Effect of the Excitation Energy  
Transfer in Binary Systems by Means of the Polymerization Method

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva  
(Physical and Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: March 23, 1957

Card 3/3

5(4), 21(8)

SOV/20-127-5-32/58

AUTHORS:

Krongauz, V. A., Bagdasar'yan, Kh. S.

TITLE:

The Transfer of Excitation Energy and the Sensitization of Chemical Reactions in the Radiolysis of Solutions of Aromatic Azocompounds

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 5, pp 1047-1050 (USSR)

ABSTRACT:

In preceding papers (Refs 1,2) the authors investigated the radiolysis of benzoyl peroxide dissolved in benzene, and found a considerable sensitization to occur. The decay rate of benzoyl peroxide was twenty times as high as corresponded to the direct action of the radiation. It was concluded herefrom that the solvent transfers energy on to the dissolved substance. According to reference 6, small additions of phenanthrene and anthracene decrease the velocity of the radiolysis, because (Ref 7), they are also energy acceptors. For the purpose of investigating the influence of the structure of the dissolved substance on the energy transfer, the radiolysis of the following aromatic azocompounds was carried out: Phenylazotriphenyl methane (PhATM), diazoaminobenzene, benzylphenyl triazene, and methyl-

Card 1/3

SOV/20-127-5-32/58

The Transfer of Excitation Energy and the Sensitization of Chemical Reactions  
in the Radiolysis of Solutions of Aromatic Azocompounds

phenyl triazene. Radiolysis was carried out by means of  $\beta$ -rays of  $\text{Co}^{60}$  in solutions from which air had been carefully removed. The primary yield of decay products per 100 ev of absorbed energy was determined. Figure 1 shows the course taken by the radiolysis of PhATM. The yield in decay products increases rapidly up to a PhATM concentration of 0.01 mol/l, after which it becomes linear. This course, which proves a more intense decay of PhATM than would correspond to radiation, confirms the opinion that benzene transfers its excitation energy to PhATM. The radiolysis of benzoyl peroxide is considerably hampered by the addition of PhATM, which is proof of the fact that the latter is just as active an energy acceptor as benzoyl peroxide. DAB, BPhT, and MPhT do not decay with noticeable velocity under the action of  $\beta$ -rays (Table 1). In the case of azobenzene a transisomerization which increases linearly with irradiation (Fig 2) occurs during irradiation. The results obtained prove that, between the structure of the molecule and its ability of taking up the energy of electron excitation and utilizing it for the carrying out of chemical reactions, there is no direct connection. There are 2 figures, 2 tables, and

Card 2/3

SOV/20-127-5-32/58

The Transfer of Excitation Energy and the Sensitization of Chemical Reactions  
in the Radiolysis of Solutions of Aromatic Azocompounds

13 references, 8 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.  
L. Ya. Karpova (Physico-chemical Scientific Research Institute  
imeni L. Ya. Karpov)

PRESENTED: April 15, 1959 by S. S. Medvedev, Academician

SUBMITTED: April 11, 1959

Card 3/3

S/020/60/132/05/45/069  
B004/B011

5.4500(B)

AUTHORS: Krongauz, V. A., Bagdasar'yan, Kh. S.

TITLE: Excitation Energy Transfer and Sensitization of Chemical Reactions in the Radiolysis of Organic Disulfide Solutions

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 5, pp. 1136-1139

TEXT: The authors found in previous investigations (Refs. 1, 2) that highly reactive substances in benzene solution gave a higher radiation yield than corresponded to the direct action of radiation, and therefore they concluded upon a transfer of excitation energy by benzene. Here, these investigations are continued for diphenyl disulfide, dibenzyl disulfide, and dibenzoyl disulfide. To prevent the radicals from recombining, diphenyl picryl hydrazyl was added. Radiolysis was carried out by means of gamma radiation of  $\text{Co}^{60}$ . The radiation yield per 100 ev was determined by measuring the reduction in concentration of diphenyl picryl hydrazyl with the aid of an  $\text{C}\phi\text{-4}$  (SF-4) spectrophotometer. Fig. 1 shows the experimental results which confirm the energy transfer. Fig. 2

Card 1/3

Excitation Energy Transfer and Sensitization  
of Chemical Reactions in the Radiolysis of  
Organic Disulfide Solutions

S/020/60/132/05/45/069  
B004/B011

illustrates the linear dependence of the disulfide decomposition on concentration. Equation (1) is written down for the quantity of the resulting decomposition products, taking account of the following constants:  $k_1$  - rate of formation of excited benzene molecules,  $k_2$  - rate of their de-activation,  $k_3^1$  rate of energy transfer,  $k_4^1$  and  $k_5^1$  rate of de-activation and dissociation of excited disulfide molecules. Table 1 specifies the values for  $k_3^1/k_2$  and  $k_1 k_5^1 / (k_4^1 + k_5^1)$ . At least 2 excited benzene molecules are formed every 100 ev. The  $\text{CH}_2$  group does not prevent the energy from migrating to the S-S group, as is confirmed by equal values for diethyl disulfide and dioctyl disulfide. Furthermore, the authors studied the action of the benzoyl peroxide addition. As is shown in Fig. 3, the decomposition of benzoyl peroxide decreases with rising disulfide concentration, with the dibenzoyl disulfide exerting a stronger protective action. Fig. 4 shows that there is no linear dependence of the resulting decomposition products on concentration but a dependence according to equation (3). The strong protective action of

Card 2/3

4

Excitation Energy Transfer and Sensitization  
of Chemical Reactions in the Radiolysis of  
Organic Disulfide Solutions

S/020/60/132/05/45/069  
B004/B011

dibenzoyl disulfide is not clarified as yet. A. N. Silant'yeva assisted in the experiments. The authors thank V. N. Vasil'yeva for supplying the disulfide materials. There are 4 figures, 1 table, and 6 references: 4 Soviet, 1 British, and 1 American.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: February 6, 1960, by S.S. Medvedev, Academician

SUBMITTED: February 6, 1960

✓

Card 3/3

REC'D (r) ALL, V. A.

report to be submitted for the ITPAC Joint Conference and 11th Intl. Congress of Pure and Applied Chemistry, Montreal, Canada, 2-12 August 1969

ALPHARET, I. P., and SOLOVY, N. A., Institute of Chemistry and Analytical Chemistry, Leningrad V. I. Vernadsky, Academy of Sciences USSR - "Thermodynamic stability of compounds as affected by the nature of the solvent" (Section 2.2 - 11 Aug. 6), morning.

BARANOVSKAYA, E. I., Leningrad V. I. Vernadsky Scientific Research Institute of Radiation Chemistry - "The effect of the nature of the solvent on the rate of the reduction chemistry" (Section A.1, Session II - 7 Aug. 6), morning.

BEZMORZHIY, N. K., Institute of General and Electrochemistry, Academy of Sciences USSR, Kiev - "The kinetics of the electrode processes in the electrolysis of molten salts" (Section 2.3 - 10 Aug. 6), morning.

BEZMORZHIY, N. K., ANDRUZH, V. I., and KOSTIKOVA, E. M., Institute of General and Electrochemistry, Academy of Sciences USSR, Kiev - "Thermodynamic properties of molten beryllium and phosphates" (Section A.3, 6, 7), Session 2 - 11 Aug. 6), morning.

BEZMORZHIY, N. K., NURKOV, I. D., and ZELINA, G. V., Institute of General and Electrochemistry, Academy of Sciences USSR, Kiev - "The diffusion coefficient in molten salts" (Section B.3 - 9 Aug. 6), afternoon.

CHERNOMIR, M. I., and the State University Leningrad M. V. Lomonosov, (Co-Chairman, Section A.3.2) (see Section II, 7) 11 Aug. 6), afternoon.

CHERNOMIR, M. I., ANDRUZH, V. I., KURCHENKO, P. A., and ZELINA, G. V., Moscow State University Institute of Chemistry, Leningrad V. I. Vernadsky Academy of Sciences USSR - "The thermodynamic properties of sodium and cesium oxides" (Section A.3.6.3), Session II(A), 11 Aug. 6), morning.

CHERNOMIR, M. I., Institute of Chemical Physics, Academy of Sciences USSR - "The proton radioactivity - a new kind of radioactive decay of nuclei" (Section A.3 - 7 Aug. 6), morning).



32305  
S/020/61/141/004/011/019  
B101/B110

5.4600

AUTHORS:

Bagdasar'yan, Kh. S., Izrailevich, N. S., and Krongauz, V. A.

TITLE:

Intramolecular transfer of energy by radiolysis of alkyl benzenes

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 4, 1961, 887 - 890

TEXT: The authors tried (1) to check the data by R. Schuler et al. (Ref. 5. see below) on the protective action of the phenyl ring in radiolysis; (2) to obtain additional data on this protective action. The yields of primary radicals in the  $\gamma$ -radiolysis of toluene, ethyl benzene, cumene, n-butyl benzene, n-octyl benzene, equimolecular mixtures of octane and benzene, and (for comparison) the radical yields of benzene, n-hexane, and n-octane were measured. The spectrophotometrically measured iodine concentration was  $5 \cdot 10^{-4}$  -  $5 \cdot 10^{-3}$  M. It did not affect the radical yield. By repeatedly freezing up the substances in the vacuum, air was removed.  $\text{Co}^{60}$  served as irradiation source. The dose measured by an  $\text{FeSO}_4$  dosimeter was  $1.9 \cdot 10^{18}$  ev/liter-sec. The data are given in Table 1 and compared with R. Schuler's.

Card 1/54

32305

S/020/61/141/004/011/019  
B101/B110

Intramolecular transfer of energy ...

The additive yield was calculated from the equation  $G_{add} = \epsilon_A G_A + \epsilon_{Ph} G_{Ph}$ . Here,  $\epsilon_A$ ,  $\epsilon_{Ph}$  are the electronic fractions of the aliphatic chain and the aromatic ring, respectively;  $G_A$ ,  $G_{Ph}$  are the radical yields of alkanes and benzene, respectively. The remarkably low yield for toluene was checked several times by means of samples purified by various methods. The values found deviated only slightly from the data given in Table 1. Comparison of the data for octyl benzene and octane + benzene (1:1) permits the conclusion that the intramolecular transfer of energy in octyl benzene is more effective than the intramolecular energy transfer from the aliphatic chain of a molecule to the phenyl ring of another molecule. For the radical yield, the following is derived:

$$G_{add} - G = \epsilon_A \left[ \theta / (1 + \theta) \right] (G_A - a_A G_{Ph} / a_{Ph}) \quad (4), \text{ where}$$

$\theta = (k_M + k_{APh} [Ph]) / (k_A + k_A)$  (5).  $k_A$  and  $k_{Ph}$  are the constants of the rate of formation of radicals from the corresponding excited molecules or groups;  $k_A$  is the deactivation constant;  $k_{APh}$  the constant of velocity of intermolecular energy transfer from the aliphatic chain to the phenyl ring;

Card 2/64

32305

S/020/61/141/004/011/019  
B101/B110

Intramolecular transfer of energy...

[Ph] is the concentration of the phenyl rings;  $k_M$  the constant of velocity of intramolecular energy transfer from the aliphatic chain to the phenyl ring;  $a_A$ ,  $a_{Ph}$  are the factors of proportionality, i. e., the yields of excited molecules per unit of absorbed energy.  $G_{add} - G$  was found to be a linear function of  $\epsilon_A$ . The straight line passes through the origin of coordinates. Therefrom, it follows that  $\theta/(1 + \theta)$  is approximately constant. An evaluation of the ratio  $a_A/a_{Ph}$  confirms that the intramolecular transfer of energy in octyl benzene takes place more probably than the intermolecular energy transfer from aliphatic chains to phenyl rings. The statements by P. Avivi, A. Weinreb (see below) saying that the energy transfer from polystyrene to 2,5-diphenyl oxazol or anthracene does not depend on whether the luminophore molecule is chemically bound to the polystyrene molecule do not contradict the above-mentioned opinion. The energy absorbed by the aliphatic chain is transferred to the neighboring phenyl ring of polystyrene. Luminescence arises due to the intermolecular energy transfer from the phenyl ring to the luminophore. There are 1 figure, 1 table, and 8 references: 1 Soviet and 7 non-Soviet. Card 3/84

Intramolecular transfer of energy...

32305  
S/020/61/141/004/011/019  
B101/B110

The four most recent references to English-language publications read as follows: Ref. 5: E. Weber, P. Forsyth, R. Schuler, Radiation Res., 3, 68 (1955); R. Schuler, J. Phys. Chem., 63, 925 (1959); A. Schapiro, J. Phys. Chem., 63, 801 (1959); P. Avivi, A. Weinreb, J. Chem. Phys., 27, 716 (1957).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

PRESENTED: July 6, 1961, by S. S. Medvedev, Academician

SUBMITTED: May 22, 1961

Legend to Table 1: (1) substance; (2) data by Schuler; (3) data by the authors;  $G_{aa} = G_{add}$ ; (a) benzene; (b) toluene; (c) ethyl benzene; (d) cumene; (e) butyl benzene; (f) octyl benzene; (g) octane + benzene (1:1); (h) hexane; (i) octane; (k) note: mean values of G are given.

Card 4/54

S/844/62/000/000/009/129  
D290/D307

AUTHORS: Bagdasar'yan, Kh. S., Izrailevich, N. S. and Krongauz,  
V. A.

TITLE: Intramolecular migration of energy in irradiated alkyl-  
benzenes

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 70-73

TEXT: The authors measured the radical yields after the irradiation of toluene, ethylbenzene, cumene, *n*-butylbenzene, *n*-octylbenzene, benzene, *n*-hexane, *n*-octane, and an equimolecular mixture of benzene and *n*-octane with  $\text{Co}^{60}$   $\gamma$  rays; iodine was used as a radical acceptor. In general, the radical yields were lower for the alkylbenzenes than would be expected if the yields were additive; in particular, the radical yield was much lower for octylbenzene than for the octane-benzene mixture. From these results the probabilities of intra- and intermolecular energy transfers are calculated.

Card 1/2

Intramolecular migration of ...

S/844/62/000/000/009/129  
D290/D307

culated, concluding that intramolecular energy transfers from the aliphatic chain to the phenyl ring are much more probable than intermolecular energy transfers between separate aliphatic chains and phenyl rings. There is 1 figure and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physico-Chemical Institute im. L. Ya. Karpov)

Card 2/2

37517

11 12 65  
5.4600

S/020/62/144/001/014/024  
B119/B144

AUTHORS: Bagdasar'yan, Kh. S., Krongauz, V. A., and Kardash, N. S.

TITLE: The mechanism of protective action of aromatic amines in the radiolysis of polymers. The sensitized formation of ion radicals of amines

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 1, 1962, 101 - 104

TEXT: The protective action of  $\beta$ -naphthyl amine, phenyl- $\beta$ -naphthyl amine, diphenyl amine, and triphenyl amine against destruction of polymethyl methacrylate (molecular weight  $\sim 7 \cdot 10^6$  and  $\sim 10^6$ ) caused by  $\gamma$ -radiation was studied.  $\text{Co}^{60}$  was used as radiation source ( $6.6 \cdot 10^{18}$  ev/liter-sec). Polymer films  $100\mu$  thick with different contents of protective agent (up to 0.2 moles/liter) were subjected to  $\gamma$ -radiation in vacuo at room temperature and  $-196^\circ\text{C}$ . The number  $G$  of chain ruptures was determined on the basis of the mean molecular weight of the polymer after irradiation. The content of protective agent before and after irradiation was determined spectrophotometrically after dissolution and coupling with p-nitro-benzoyl

Card 1/3

The mechanism of protective action...

S/020/62/144/001/014/024  
B119/B144

diazonium. The spectra of the films irradiated at  $-196^{\circ}\text{C}$  were taken at the same temperature by means of a special quartz Dewar vessel as cuvette. Results: At room temperature, the number  $G$  of chain ruptures is, in all cases, independent of the radiation dose; it depends on the amount of protective agent in the film.  $G$  is 1.7 with pure polymer; phenyl- $\beta$ -naphthyl amine in amounts of 0.2 moles/liter reduces  $G$  to 0.65. Similar results were obtained with the other amines. At  $-196^{\circ}\text{C}$ ,  $G$  depends to a limiting value on the radiation dose. At this temperature,  $G = 0.8$  for pure polymer, and 0.4 with 0.05 moles/liter of triphenyl amine. At low radiation doses, the consumption of phenyl- $\beta$ -naphthyl amine is 1-2 molecules per 100 ev energy. On irradiation at  $-196^{\circ}\text{C}$ , the films are pink, green, or blue according to the amine content. The coloring is due to the formation of ion radicals in the amines which are not immediately neutralized by electrons at this temperature. The ion radicals are formed by transfer of the energy absorbed by the substrate (polymer, in this case) to the amine. The protective action of aromatic amines is explained by these energy transfers. There are 4 figures. The most important English-language references are: L. Wall, D. Brown, J. phys. Chem., 61, 129 (1957); G. Lewis, D. Lipkin, J. Am. Chem. Soc., 64, 2801 (1942).

Card 2/3



The mechanism of protective action...

S/020/62/144/001/014/024  
B119/B144

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

PRESENTED: November, 17, 1961, by S. S. Medvedev, Academician

SUBMITTED: November 1, 1961.

Card 3/3

S/195/63/004/001/004/009  
E075/E436

AUTHORS: Krongauz, V.A., Vasil'yev, I.N.

TITLE: An investigation of the processes of energy transfer  
by the methods of luminescence and radiation chemistry

PERIODICAL: Kinetika i kataliz, v.4, no.1, 1963, 67-75

TEXT: The work was carried out to verify the postulate that for irradiated three component systems, consisting of two acceptors dissolved in benzene, the protective action of acceptors, such as benzoyl peroxide, is due to energy transfer from the second acceptor to the peroxide, apart from energy transfer from the solvent molecules to each of the acceptors. The mechanism of energy transfer was investigated in the system consisting of p-terphenyl, 2,5 diphenyloxazol (luminophors) and benzoyl peroxide dissolved in toluene. The system was irradiated with ultraviolet light ( $\lambda = 265 \text{ m}\mu$ ) and  $\gamma$ -rays from a  $\text{Co}^{60}$  source. On irradiation with  $\gamma$ -rays the decomposition yield of benzoyl peroxide increased rapidly for concentrations up to 0.01 mole/litre. The high initial radiation yields were due to energy transfer from the solvent. The yield for solutions containing  $\sim 0.05$  mole/litre of luminophor remained constant after reaching a maximum. Similar

Card 1/3

An investigation of the processes ... S/195/63/004/001/004/009  
E075/E436

results were obtained on irradiation with ultraviolet light. The authors also investigated the luminescence of luminophors induced by  $\gamma$ -rays and ultraviolet light ( $\lambda = 290$  and  $300 \text{ m}\mu$ ) and quenched by benzoyl peroxide. As the radiation with  $\lambda > 290 \text{ m}\mu$  was absorbed only by the luminophors, the quenching effect of the peroxide can be explained by the interaction of the benzoyl peroxide with the excited molecules of the luminophors. The efficiency of energy transfer from the solvent molecules (A) to benzoyl peroxide molecules (B) -  $F_{AB}$  and that for the transfer from the luminophor molecules (C) -  $F_{AC}$  were:  $F_{AB} = 380 \pm 50$  litres/mol for  $B < 0.01$  mole/litre,  $F_{AC} = 1200 \pm 600$  litres/mole for  $\gamma$ -ray irradiation and  $1150 \pm 70$  litres/mole for the ultraviolet irradiation. The energy transfer values  $F_{CB}$  were  $80 \pm 20$  litres/mole for the irradiation with  $\gamma$ -rays and  $45 \pm 4$  litres/mole for the ultraviolet irradiation. These values obtained by different methods were consistent, which confirmed the postulated mechanism of energy transfer. Comparison of various calculated and experimental values for the energy transfer from toluene to benzoyl peroxide and the luminophors showed that the transfer takes place

Card 2/3

An investigation of the processes ... S/195/63/004/001/004/009  
E075/E436

as a result of long-range interaction between the molecules, diffusion effects also being important. The energy transfer from the luminophors to benzoyl peroxide proceeds by a diffusion process via the formation of a transition complex between the excited luminophor molecules and those of benzoyl peroxide. There are 5 figures and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya.Karpova  
(Physico-chemical Institute imeni L.Ya.Karpov)

SUBMITTED: December 21, 1961

Card 3/3

10552-63

EPR/RTF(c)/RTT(m)/TTS 13-11/Pr-1 21/11

ACCESSION NR: AP3001486

5/0195/63/004/002/0204/0207

AUTHOR: Vasil'yev, I. N.; Krongauz, V. A.

64  
62

TITLE: The transfer of energy during the sensitized photolysis of benzoyl peroxide in solutions

SOURCE: Kinetika i kataliz, v. 4, no. 2, 1967, 204-207

TOPIC TAGS: photo-decomposition of benzoyl peroxide, toluol, 2,5-diphenyloxazol, influence of light, radiolysis, aromatic compounds, photolysis

ABSTRACT: The sensitizing of the photodecomposition<sup>7</sup> of benzoyl peroxide in toluol with the inductive light which is absorbed by the toluol has been studied. Investigation was also made with the tricomponent system benzoyl peroxide-toluol-2,5-diphenyloxazol under the influence of light absorbed by the luminophore. In the previous work it was found that during the radiolysis of aromatic compounds in dilute benzene and toluol solutions, a sensitized decomposition of these compounds caused by the energy transfer from the solvent to the solute takes place. The results obtained by photolysis for the system toluol-benzoyl peroxide where the energy transfer effect is 450 / or - 80 l/mole and the transfer of energy from the luminophore to the benzoyl is 40 / or - 10 l/mole are in good agreement

Card 1/2

L 10592-63

ACCESSION NR: AP3001486

2

with the previously obtained results with radiation. This confirms the mechanism suggested earlier for the energy distribution during the radiolysis of tricomponent system of toluol-benzoyl peroxide-luminophor. "The authors express their deepest gratitude to Kh. S. Bagdasap'yan for taking part in the organization of this work and for evaluating the results." Orig. art. has: 1 table and 3 graphs.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute)

SUBMITTED: 06Jun63

DATE ACQD: 10Jun63

ENCL: 00

SUB CODE: 00

NO REF SOV: 006

OTHER: 001

Card

2/2

L 10703-63

ACCESSION NR: AP3002023

EMP(1)/EPF(c)/EWT(1)/EWT(m)/BDS--AFETC/ASD--Pc-L/Pc-L--BM/LW  
S/0195/63/004/003/0489/0491

AUTHOR: Pshiby\*lovich, Z. V.; Krongauz, V. A.; Bagdasar'yan, Kh. S.

TITLE: Study of the radiolysis<sup>19</sup> of some hydrocarbons by gas chromatography and electron paramagnetic resonance<sub>21</sub>

SOURCE: Kinetika i kataliz, v. 4, no. 3, 1963, 489-491

TOPIC TAGS: radiolysis, hydrocarbons, gas chromatography, electron paramagnetic resonance, alkyl benzenes, intramolecular energy migration, Gamma rays, n-octane, n-octylbenzene

ABSTRACT: The purpose of this work was to verify earlier conclusions that alkyl-benzenes are appreciably more stable to irradiation than expected when independent radiolytic decomposition of side chain and ring is postulated. Analyses of data obtained showed that intramolecular energy migration is at least five times more probable than intermolecular transfer. The main gaseous product of irradiation of n-octane, an equimolecular mixture of octane and benzene and n-octylbenzene with Gamma-rays from Co sup 60 was hydrogen in yield independent of dose up to 100 megarad and falling in the sequence shown. The low hydrogen yield from n-octylbenzene is ascribed to intermolecular migration of energy from side chain to

Card 1/2

L 10703-63

ACCESSION NR: AP3002023

benzene ring. From EPR spectra it is suggested the radical formed from n-octylbenzene has the unpaired electron on the carbon adjacent to the benzene nucleus and that this is the site of the bond breakage. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 10Jul62

DATE ACQ: 12Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 004

OTHER: 006

ja/1  
Card 2/2



ACCESSION NR: AP4035153

S/0195/64/005/002/0358/0359

AUTHORS: Krongauz, V. A.; Bagdasar'yan, Kh. S.

TITLE: Observations on a paper by Yu. A. Kolbanovskiy, A. M. Brodskiy and L. S. Polak on the mechanism of inhibiting radiolysis

SOURCE: Kinetika i kataliz, v. 5, no. 2, 1964, 358-359

TOPIC TAGS: radiolysis, inhibition, inhibition mechanism, energy transfer, inhibitor concentration, benzeno benzoyl peroxide phenanthrene, benzene benzoyl peroxide anthracene, energy transfer mechanism

ABSTRACT: In the works cited (Tr. 2 Vses. soveshch. po radiatsionnoy khimii, Izd-vo AN SSSR, M., 1962, str. 65, "All-Union Conference on Radiation Chemistry, and Dokl. AN SSSR, 139, 1081, 1961) Kolbanovskiy et al. discussed the inhibiting effects in the radiolysis of solutions created by small amounts of inhibitors, indicating this action was tied up with the transfer of energy from the solvent to the inhibitor. Examination of concentration curves (c) of additives plotted against the inverse of radiation output of the decaying donor ( $1/G$ ) led to their conclusion that  $1/G = C^{2/3}$ . Their conclusions regarding the mechanism of energy transfer were made on this basis. Based on Card, 1/2

ACCESSION NR: AP4035153

original work and other literature, the present authors disagreed with Kolbanovskiy et al., indicating that  $1/G = C$  is just as possible as  $1/G = C^{2/3}$ , and that in the benzene-benzoyl peroxide-phenanthrene (anthracene) system the solvent benzene is the primary donor and the energy transfer from benzoyl peroxide to the inhibitor acceptor is more a secondary process (Kolbanovskiy felt energy was transferred from benzoyl peroxide donor to the phenanthrene or anthracene acceptor). The present work indicated the mechanism of energy transfer as related to concentration of additives requires a more consistent approach than the one taken by Kolbanovskiy et al. At low concentrations there is no easily determined relationship between energy transfer and inhibitor concentration, but at higher concentrations the relationship  $1/G \propto C$  seems to hold. Orig. art. has: 4 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physical  
-Chemical Institute)

SUBMITTED: 07Mar63  
SUB CODE: OC, NP

NR REF SOV: 008

ENCL: 00  
OTHER: 002

Card 2/2

KRONGAUZ, V.A.; BAGDASAR'YAN, Kh.S.

Remarks on articles by I.U.A. Kolomoyskii, A.V. Brodskii,  
L.S. Polak on the mechanism of radiolysis inhibition. Kin. i  
kat. 5 no.2:358-359 Mr-Ap '64. (MIRA 17:8)

1. Fiziko-khimicheskiy institut imeni Karpova.

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0

APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000826620016-0"

Word 4

KRONGAUZ, V.A.

Triplet molecules in liquid benzene. Photochemical processes  
in a thin absorbing layer. Dokl. AN SSSR 155 no. 3:658-661  
Mr '64. (MIRA 17:5)

1. Fiziko-khimiicheskiy institut im. L.Ya.Karpova. Predstav-  
leno akademikom S.S.Medvedevym.

KRONGAUZ, V.A.

Photopolymerization mechanism of vinyl compounds. Proof of the participation of monomer molecules in the triplet state in the initiation of photopolymerization. Teoret. i eksper. khim. 1 no.1:47-54 Ja-F '65. (MIRA 18:7)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

BERENFEL'D, V.M.; KRONGAUZ, V.A.

Effect of the substituents separated by an aliphatic chain from the benzene ring on the optical properties of substituted benzene. Dokl. AN SSSR 162 no.6:1300-1303 Je '65. (MIRA 18:7)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Submitted December 9, 1964.



ACC NR: AT5023436

SOURCE CODE: UR/0000/65/000/000/0110/0113

AUTHOR: Krongauz, V. A.; Vasil'yev, I. N.; Kirsanov, B. P.

ORG: none

TITLE: Investigation of the mechanism of intermolecular energy transfer in organic solutions. Effect of diffusion

SOURCE: Simposium po elementarnym protsessam khimii vysokikh energiy. Moscow, 1963. Elementarnyye protsessy khimii vysokikh energiy (Elementary processes of the chemistry of high energies); trudy simpoziuma. Moscow, 1965, 110-113

TOPIC TAGS: excited state, particle interaction, molecular interaction, particle collision, luminescence

ABSTRACT: The transfer of excitation energy between benzene and toluene, 2,5-diphenyloxazole, and 2,5-diphenyloxazole and isopropylidiphenyl and cyclohexane was studied. The dependence of the relative intensity ( $I$ ) of luminescence of a diphenyloxazole solution (0.005 moles/l) in isopropylidiphenylcyclohexane mixture upon the reciprocal viscosity of the solvent is shown in figure 1. For all three systems, the experimentally determined rate constants of energy transfer  $k_{AB}$  are lower than those calculated from the formula

$$k_{AB} = 4\pi D r_1 N \left( 1 + \frac{r_1}{\sqrt{D \tau_1}} \right)$$

Card 1/2

ACC NR: AT5023436

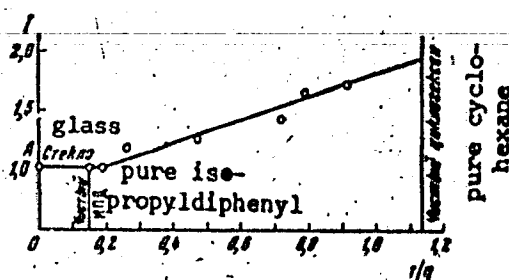


Fig. 1. Diphenyloxazole in a glassy isopropylidiphenyl solvent at  $-78^{\circ}\text{C}$ .

where  $D$  is diffusion coefficient,  $r$  is critical radius for instantaneous intermolecular energy transfer by exchange mechanism,  $\tau_0$  is life of excited molecules. This discrepancy is probably due to deviation from the probability of resonance interaction  $W(r)$  between molecules A and B as calculated from the formula

$$W(r) = \frac{1}{\tau_0} \left( \frac{r_0}{r} \right)^6$$

where  $r$  is intermolecular distance. Orig. art. has: 1 figure, 1 table, 7 formulas.

SUB CODE: 20/ SUBM DATE: 23Feb65/ ORIG REF: 004/ OTH REF: 002

jw

Card 2/2

ACC NR: AP6015539

SOURCE CODE: UR/0379/65/001/001/0047/0054

AUTHOR: Krongauz, V. A.

ORG: Physical Chemistry Institute im. L. Ya. Karpov, Moscow (Fiziko-khimicheskii institut)

TITLE: Mechanism of photopolymerization of vinyl compounds. Evidence of participation of the triplet state of monomeric molecules in initiating photopolymerization

SOURCE: Teoreticheskaya i eksperimental'naya khimiya, v. 1, no. 1, 1965, 47-54

TOPIC TAGS: photopolymerization, hydrocarbon, chemical kinetics, monomer, isomerization, luminescence

ABSTRACT: It has been established that upon irradiation of dilute solutions of trans-stilbene in benzene using light at a wave-length of 254 millimicrons, absorbed practically only by benzene, a sensitizing reaction of trans-cis-isomerization of stilbene occurs. Comparison of data on isomerization with measurements of luminescence intensity of stilbene solutions and of pure benzene solutions has afforded the conclusion that isomerization is induced by triplet-triplet transfer of energy from benzene to stilbene and singlet excited states of benzene are not involved. The concentration dependence of quantum yields of isomerization of stilbene has made it possible to estimate the lower limits of quantum yield of triplet benzene molecules ( $\gamma_T \leq 0.25$ )

Card 1/3

L 2476-56

ACC NR: AP6015539

and their lifetime ( $\tau \leq 10^{-6}$  second). The reaction of sensitized isomerization of stilbene is evidently a convenient means of studying triplet states forming upon action of light on organic liquids, when observation of sensitized phosphorescence is hampered due to low steady-state concentrations of triplet molecules. In this paper, this reaction was used in detecting triplet molecules forming when light acts on a vinyl monomer. To discover the nature of particles initiating photopolymerization of vinyl monomers, a comparative study is presented of the sensitizing isomerization of stilbene in methylmethacrylate and the kinetics of photopolymerization of this monomer in the presence of stilbene. Photopolymerization of the systems investigated has several interesting features. 1. Calculation of the quantum yield of polymerization initiation ( $\beta$ ) using light at  $\lambda = 254-265$  millimicrons from the formula  $V_0 = k_t/k_0^2 M(\beta I)^2$  ( $V_0$  = rate of polymerization of the pure monomer,  $k_{pn}$   $k_0$  = rate constants of growth and rupture of kinetic chains,  $I$  = intensity of absorbed light in einsteins  $\cdot$  second yields for  $\beta$  the value  $(1 \pm 0.2) \cdot 10^{-3}$ , if we take  $k_p/k_0^2 = 0.05$  and  $M = 9.3$  moles/liter. The value of  $\beta$  is almost 1/5 that of the minimum value of the quantum yield of triplet monomer molecules  $\gamma_t$ , determined from data on stilbene isomerization, that is, at least four of five triplet monomer molecules are deactivated, not initiating polymerization. 2. Specified is the effect of stilbene additions on the extensive polymerization of polymethylmethacrylate, obtained upon action of light at  $\lambda = 254-265$  millimicrons. It is clear from the data that additions of cis-stilbene substantially reduce the extent of polymeri-

Cord 2/3